

# Turret Clock Forum

## John Griffiths FBHI reports on the second annual Turret Clock Forum

Your scribe was privileged to be amongst the ninety plus people who attended Upton Hall on September 23rd to listen to six speakers talk on a wide range of turret clock topics.

**Canon Alan Fell**, chairs the Clocks Committee of the Church Buildings Council, and thus was well placed to be our chairman for the meeting. Alan introduced the speakers and kept us amused with assorted anecdotes.

**Keith Scobie Youngs FBHI** gave us an excellent history of auto-winders starting with their precursors, the mechanisms that enabled clocks to be wound remotely from the movement. Examples from the 1700s were Ipplepen Parish Church and Buckland Parish Church tune playing machine. He then described the various patents, starting with J. James 11 June 1859. Gillett appear to be the first patentees of electrical auto-winding in 1884 with a system that switched on when the weights had fallen a predetermined amount.

The first electrically driven Huygens endless chain unit was probably that introduced by Smith of Derby in 1904. The Dent auto-winder installed in 1912 on the Great Clock at Westminster was driven by a five horsepower electric motor. Winding motion was transferred via a horizontal shaft to three friction clutches driving roller chains, with a system of disconnectors to allow quarters and hours to be struck without interruption.

Manchester Town Hall clock was wound hydraulically using motors driven by water from a special high pressure main. Because clocks are usually out of the way, many churches consider them to be a nuisance. The introduction of the national grid in 1926 meant that frequency control was important and it became possible to use synchronous motors to drive hands. In 1938 Gillett introduced their design and churches found it expedient to motorise their clocks.

Keith went on to describe how auto-winders had been applied to clocks. Photographs illustrated the problems that can be encountered on clocks where the drive is applied to the second wheel when the barrel has lifting pins or cams for the strike. The presence of a large pile of shredded brass and the sight of eroded wheel teeth showed that pinions intended to be driven do not usually make good drivers. He outlined other problems, such as lost motion and increased backlash that also occur with this arrangement. He supported his views that second wheel winding should not be used, with the results of trials on clocks showing an increased energy dissipation when the clock's gearing was used in reverse. With a few dissenters, the audience agreed with Keith's views on this matter. There followed a lively series of questions and answers.



*The first speaker Keith Scobie-Youngs.*

**Christopher Pickford**, the UK's leading bell historian was present and joined in saying that what was good practice 25 years ago was not good practice now. Another person said that bells and clocks in churches sometimes had a most uneasy relationship, and went on to recount how one church clock was fitted with auto-winders just because the parishioners had collected too much money for a project and decided to use the spare funds this way, notwithstanding no shortage of volunteer winders.

**Phil Irvine** had been asked to talk primarily on bells. Philip had been apprenticed to his father's firm and installed his first set of bells when aged seventeen. He much preferred working on traditional wooden bell frames considering iron frames to be examples of Meccano. He explained that many older churches had been modified since the bells were installed. The addition of organs, screens and other accretions meant it was frequently not possible to take the bells out. Such work as drilling out clapper staples from a bell sometimes has to be done in the tower.

Philip gave practical detail on how to sling and manoeuvre bells in a confined space. He explained much else, how to heat treat wrought iron, make a wooden headstock, splice new pieces into a frame, cast new headstock brasses, calliper a bell's sound edge and much more. His versatility as a craftsman was illustrated by the photographs of newly hand forged bell hammers and rebound springs.

Philip went on to show examples of appallingly bad work and show how this had been corrected. Using another example, he showed how a few years of neglect, salt air and pigeons could reduce to a ruin a newly installed suite of bells. Philip is very well known with clients all over the UK and abroad and is well respected for his new work in addition to his conservation and restoration work on bells and clocks. He described current practice which if followed, should help the requirements of the bells and the clock to be met. Examples of poor practice were the leading of bell ropes through the clock movement, the removal of flies and the moving of clock line runs. He gave examples of auto-winders which had sound mechanical work but which were an electrical nightmare. Phil is well placed to show how clocks and bells can be made to interact properly, a point that came out in the discussion that took place after his presentation.

**Chris McKay MBHI** was the next speaker and talked about the legacy of Big Ben. He first took us through the history of the gravity escapement beginning with Thomas Mudge and Thomas Cummings. The escapements of James Harrison III were illustrated along with others such as Bloxham's 1853 ten leg version. Denison's disagreement with Airy over the suitability of this escapement for turret clocks was discussed. An interesting slide shown was what might have been the experimental gravity escapement clock sent by Dent to Greenwich for testing by Airy. The slow development of the double three legged escapement as now fitted to the Westminster clock was outlined. The present escapement is the fourth, the first having in 1859 proved liable to trip allowing the clock to jump forward two seconds each instance it occurred.

Variants of the gravity escapement were illustrated and described along with clocks to which they were fitted. To mention two of the variations shown; a fifteen leg by Gillett and Bland and Thomas Cooke of York' five leg.



**BHI Chairman Kenneth Lloyd Jones welcomes delegates to the Turret Clock Forum.**

**Derek Frampton MBHI**, a DAC adviser, was next to speak. He described his role as being in the no-man's land between the church and the repairer. He succinctly gave us his three criteria governing how he works and another three that he uses to guide his decisions as to whether a clock should be auto-wound or not. Derek detailed how he worked, spending about one day on each clock. He takes about sixty photographs of each clock and all the associated mechanisms, lead off work, motion work, lines, pulleys, weights and any existing auto-winders. Many faults are due to the clock movement only being treated and repaired, with lines being left rubbing, rusted motion work, bent shafts and worn pulleys being ignored by those who service and overhaul.

Using some of his slides Derek illustrated some unfortunate modifications to pulley eyes that rendered the weight support arrangements completely unsafe. All these problems could have been avoided by engaging the services of the DAC adviser at an early stage, that is, before the work was ordered and commenced.

Your scribe was most interested in Derek's account which illustrated a similar position to that occupied by those advising the HLF on their projects.

**Geoff Kirkman spoke** next on the safeguards he has put in place to ensure his company does not suffer as a result of client companies' financial difficulties. This would appear to be a particular problem in the construction industry and greatly affects properties being redeveloped. Geoff went on to describe an entirely different set of problems with a site they were doing work on. After photographing the movement in situ and removing it for overhaul, they left the building contractor to proceed with the work whilst Geoff's colleagues overhauled the clock. A contractor's vehicle accidentally demolished the clock tower. Because the building is listed it is to be rebuilt. The photos that Geoff took before the demolition were very useful to the contractor who was to do the re-building. Geoff is currently the involuntary curator of an overhauled turret clock and has little idea of when it will be off his hands.

**Peter Watkinson FBHI** works for a number of national museums as well as for the National Trust and churches. By the nature of his museum and Trust clients the rebuilding, repairing and refurbishment of components, instead of replacing them, feature highly in his work. Using examples of pinions, wheels, pallets and arbors he showed that with ingenuity, skill and a mixture of old and new technology it was possible to reclaim and re-use worn and damaged parts. Precision TIG welding and laser welding are two more modern techniques but dovetailing and brazing also have their role. Modifications to ordinary tools can sometimes help such as using facet ground drills when opening out the holes in the trundles needed for lantern pinions because facet ground drills follow existing holes far better than conventionally ground drills. Peter showed us a most interesting range of techniques and there was much discussion during the subsequent questions.

**Chris McKay** is to be congratulated in putting together such an excellent group of speakers and your scribe considers himself lucky to have been able to attend. Staff at Upton Hall treated us very well, the newly refurbished and curtained ball room turned out to be an excellent lecture theatre and the new sound system was a success – after people had worked out how best to use it. At lunch, the Melton Mowbray pie with cranberries was a delight.

**R John Griffiths FBHI**

## Turret Clocks in Lincolnshire

Some of our members may be interested in the soon-to-be-published revised edition of *Lincolnshire Bells and Bellfounders*, by Dr John Ketteringham MBE PhD.

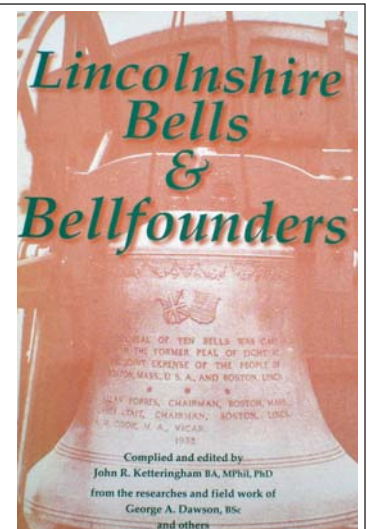
This book of 445 pages, including many photographs and illustrations, should not only be of interest to 'bell people', but to anyone interested in industrial archaeology, the history of technology, etc. A chapter is included on the history of bell founding in the county in which archaeological evidence for casting 'on site' is recorded. The major bellfounding industries at Barton-Upon-Humber (the John and James Harrison connection), Lincoln and Stamford have been thoroughly researched and recorded. There is also evidence of bell casting at other places in the county, including Market Rasen, Snitterby and Spital in the Street.

Most of the featured bells are in churches, but those of 39 schools and 40 other secular buildings have also been recorded. The recent interest in bell frames has been recognised (Harrisons again!). The county possesses a number of frames in which parts date back to the sixteenth century and earlier. An important addition to this second edition is an appendix of 59 letters from bellfounders and

others relating to the bells of Lincoln Cathedral written in the eighteenth and nineteenth centuries. These culminate in the recasting of Great Tom and make fascinating reading, particularly to industrial archaeologists.

Although the List of Subscribers is now closed, I have negotiated with Dr Ketteringham that any BHI member who sends in an order with payment by **30th November 2009**, and quoting his/her BHI membership number, can pay the subscribers' rate of £40 plus £5 P&P = £45 (it will cost £50 plus P&P after publication):

Contact Dr John R. Ketteringham, 27 Bunkers Hill, Lincoln LN2 4QS for more details.



**Geoff Armitage BA MBHI ACR**